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Specification and Drawings, as originally filed, with Application for Patent Serial No: **CA 2407368**, on October 7, 2002, by **DARRIN EUGENE SMITH,** for "Guide for Workbench".

Agent certificateur/Certifying Officer

May 28, 2007

Date

Canada

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31-03-04

OPIC CIPO

This invention relates to a guide for facilitating the adjustment of a piece of stock on a work bench and more particularly to a guide for adjusting the position of a piece of stock on a work bench in order to control the angle of cut into the stock by a power tool. The power tool may be a router, a power saw and the like.

A piece of stock which is cut on a work bench usually contacts a fence along one of its sides. Along its oppositely facing side, the stock contacts a guide which serves to control the movement of the stock across the working surface. The guide is usually fitted with a tongue which slides in a groove. The groove conventionally extends laterally across the working surface. By means of the tongue, the stock can travel on a path which is parallel to the groove.

Many problems are encountered in controlling the stock in this manner. For the tongue to move smoothly in the groove, it cannot be too tight-fitting. The looser it is, however, the more subject the tongue is to vibration or oscillation. Such movement causes a like movement of the guide with a resulting loss in precision of the cut made by the power tool. Such movement also causes fatigue since the operator will feel the movement when his hands are on the guide.

Another problem which is frequently encountered is that the stock tends to bind in the cutter of the power tool as the stock is being moved across the working surface. The reason is that the groove in which the tongue of the guide travels is spaced apart from the cutter a significant distance to prevent it from interfering with the cutting operation. The guide, being attached to the tongue, is spaced apart an equal distance. The further the guide is from the point

at which the stock is cut, the less effective it is in preventing unintended movement of the stock at that point. Such movement is usually the cause of binding.

A further problem is that as the cutter rotates, it urges the stock away from the fence and toward the guide. Because of the significant spacing between the cutter and the guide, the stock is difficult to control and unintended movement of the stock may occur.

I have invented a guide for controlling a piece of stock in a way that substantially overcomes these problems. The guide does not move in a groove but moves along a guide rod. Very little if any vibration or oscillation occurs as the guide moves. Moreover, the guide can be moved until it is very close to the cutter. In fact it can be moved over the cutter. Being so close, very little if any unintended movement of the stock occurs as it is being cut.

A further advantage of my guide is that as the stock is being cut, the cutter urges the stock into the fence and not into the guide. Since a fence is stationary during cutting, very little unintended movement of the stock is caused by the cutter.

The guide of my invention controls the angle of stock on a work bench equipped with a fence. Briefly, the guide includes: a base and a slider connected to the base and movable along the fence. A rotary element is mounted for rotation to the base and a backing block is mounted to the rotary element for supporting the stock while it is on the working surface. There is means for releasably clamping the rotary element to the base to prevent the rotary element from rotating relative to the base.

The guide is described with reference to the accompanying drawings in which:

Figure 1 is a perspective view of the guide in conjunction with a work bench and a fence;

Figure 2 is an exploded perspective view of the components of the guide;

Figure 3 is a plan view of the guide, work bench and fence; and

Figure 4 is another plan view of the same components as is Figure 3.

Like reference characters refer to like parts throughout the description of the drawings.

With reference to Figures 1 and 3, the guide of the invention, generally 10, is mounted to a fence 11 which is mounted in grooves 12a,b at opposite sides of the working surface 14 of a work bench. Knobs 16 are each end of the fence are provided for locking the fence in grooves 12a,b so that the fence is stationary. The structure of the fence and the way in which it operates are conventional

A circular opening 18 is formed in the working surface through which the cutter (not illustrated) of a conventional power tool extends. The cutter may be a bit of a router or the blade of a power saw. The power tool, whether a router or a power saw, is mounted beneath the working surface.

A guide rod 20 is supported above the fence by brackets 22a,b which are attached to the rear wall of the fence. The guide rod extends horizontally along the length of the fence and supports a slider, generally 24. The slider has a sliding tube 26 having an internal passageway in which the guide rod is received. The sliding tube is freely slidable along the guide rod.

A stop 27 for the slider is mounted for sliding along the guide rod. With reference to Figure 3, the stop is composed of a ring 28 which encircles the guide rod and an adjusting screw 29 which passes through a threaded opening in the ring and into contact with the guide rod. Tightening of the screw into contact with the rod immobilizes the stop in the conventional manner. The stop serves to limit the length of travel of the slider.

As illustrated in Figure 2, the slider has a pair of spaced blocks 30a,b affixed to tube 26. The blocks rest on the upper edge of the fence as the tube slides along the guide rod. The blocks are connected to a side wall 32 which extends vertically downwardly and terminate at a base 34. The base extends horizontally outward from the side wall.

The base supports a rotary plate or element 36. The plate has an outer edge which is curved in part and otherwise is straight. The plate has an opening 38 for receipt of a fastener composed of threadably interconnected stud 40 and pin 42. The fastener serves to interconnect the plate and base so that the plate is rotatable relative to the base.

An upstanding rail 44 is attached to the plate adjacent to to the straight part of the plate. The rail is connected to a backing block 48 by means of two or more pairs of threadably interconnected studs 50 and nuts 52. The nuts are received in a groove 56 in the backing block.

The groove has an interior large enough to allow the nuts to slide freely but the front opening of the groove is constricted so that the nuts cannot pass through the opening. The nuts thus hold the block to the rail but allow the block to slide relative to it. If, however, the studs are

tightened to the nuts, the nuts will frictionally engage the walls of the groove which define the opening. The nuts will then prevent the block from sliding.

When the rail is attached to the backing block, the downwardly facing lower wall of plate 34 is preferably spaced above the working surface 14 of the work bench. As such, the operation of the plate will not be impeded by dust, sawdust and chips which collect on the working surface. More preferably, the lower plate wall is spaced above the cutter of the power tool so that the cutter will not damage the plate when the plate moves over the cutter

A scale 60 is etched or painted onto the upper surface of the plate adjacent to its curved edge. The scale acts as a gauge to measure the angle of the plate relative to some line of reference. In Figure 1, the line of reference is on the plane of the front wall 11a of the fence. Since the plate is connected to the backing block, the gauge serves to measure the angle between the front wall 48a of the block against which the stock is placed, and the front wall 11a of the fence.

An arcuate groove 64 is formed in the plate. A handle 66 has at its lower end a threaded shank 68 which passes through the groove and into a threaded aperture 70 in the base. The handle serves as means for releasably clamping the plate to the base so that the position of the plate on the block is adjustable. Thus, by means of the handle, the piece of stock may be clamped in a fixed angular position relative to the fence.

The operation of the adjusting guide of the invention is as follows: With reference first to Figure 3, a piece of stock 72 is shown resting against backing block 48. The angle of the stock is

adjusted by loosening handle 66 so that plate 36 can be rotated. Once the stock is in the desired position, the handle is tightened so that the plate is immovable relative to the base. The stock can then be moved laterally in the direction of arrow 76 by applying pressure to the adjusting guide to cause sliding tube 26 to slide along the guide rod in that direction. As the stock moves over opening 18, it is cut by the cutter.

The stock can be moved longitudinally forward in the direction of arrow 78 by loosening knobs 16 to allow the fence to carry the guide forward.

When the cutting operation is complete, the guide can be moved out of the way by lifting handle 66. By so doing, the base and plate will rise and tube 26 will rotate about guide rod 20. Further lifting of the handle will cause the guide to swing over the fence and away from the working surface where it will not hinder any operation being carried out on the surface.

With reference to Figure 4, the angle of the fence can be adjusted by knobs 18 to allow for greater flexibility in the path of the guide.

It will be understood, of course, that modifications can be made in the structure of the guide which is described herein without departing from the scope of the invention.

I claim:

1. An guide for controlling the angle of stock on the working surface of a work bench equipped with a fence, said guide comprising: a base; a slider connected to said base and movable along said fence; a rotary element mounted for rotation to said base; a backing block mounted to said rotary element for supporting said stock while on the working surface; and means for releasably clamping said rotary element to said base to prevent said rotary element from rotating relative to said base.

2. The guide as claimed in claim 1 further including means for slidably mounting said backing block to said rotary element such that the position of said backing block on said rotary element is adjustable; and means for releasably clamping said block to said rotary element for preventing said block from sliding relative to said rotary element.

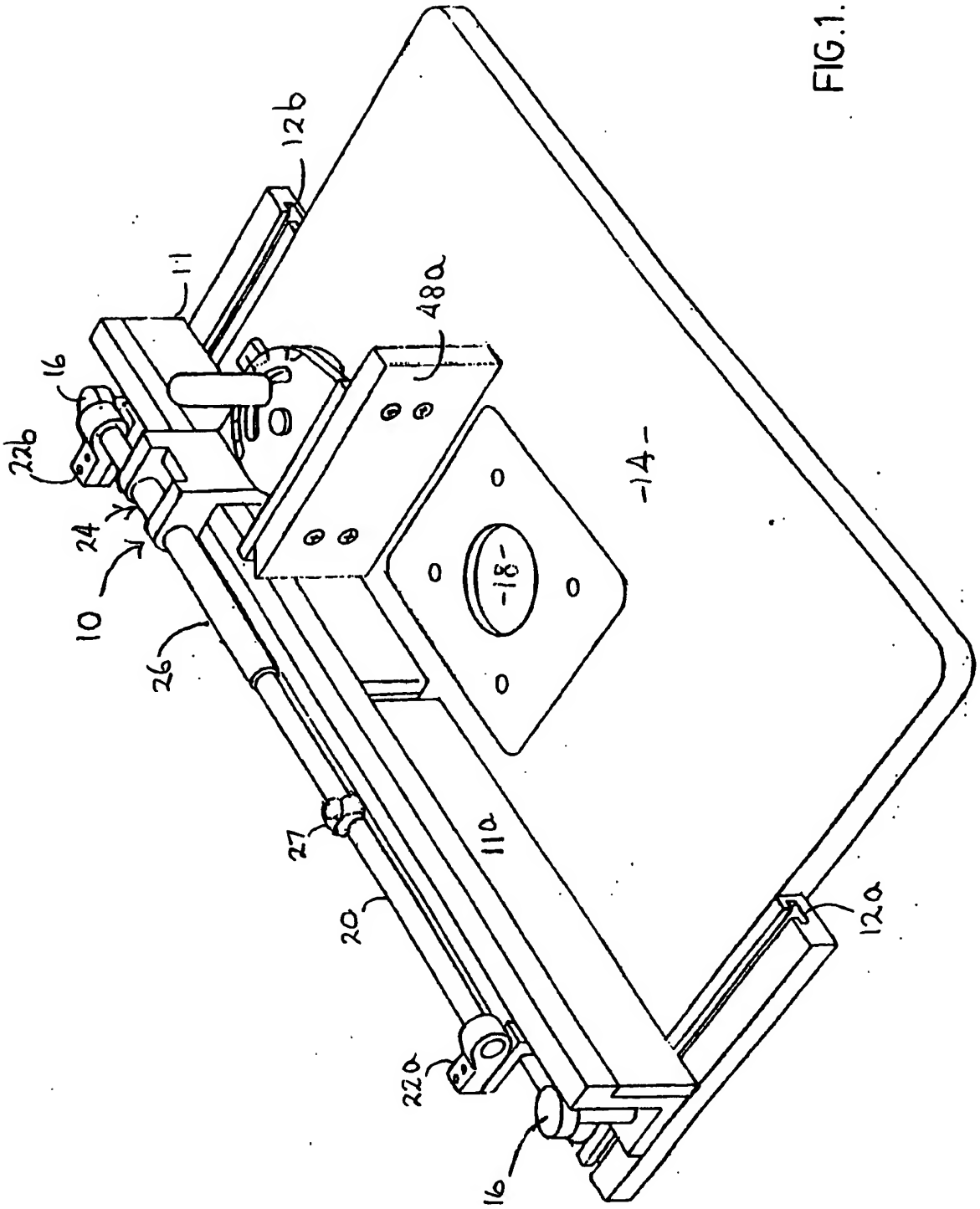


FIG.1.

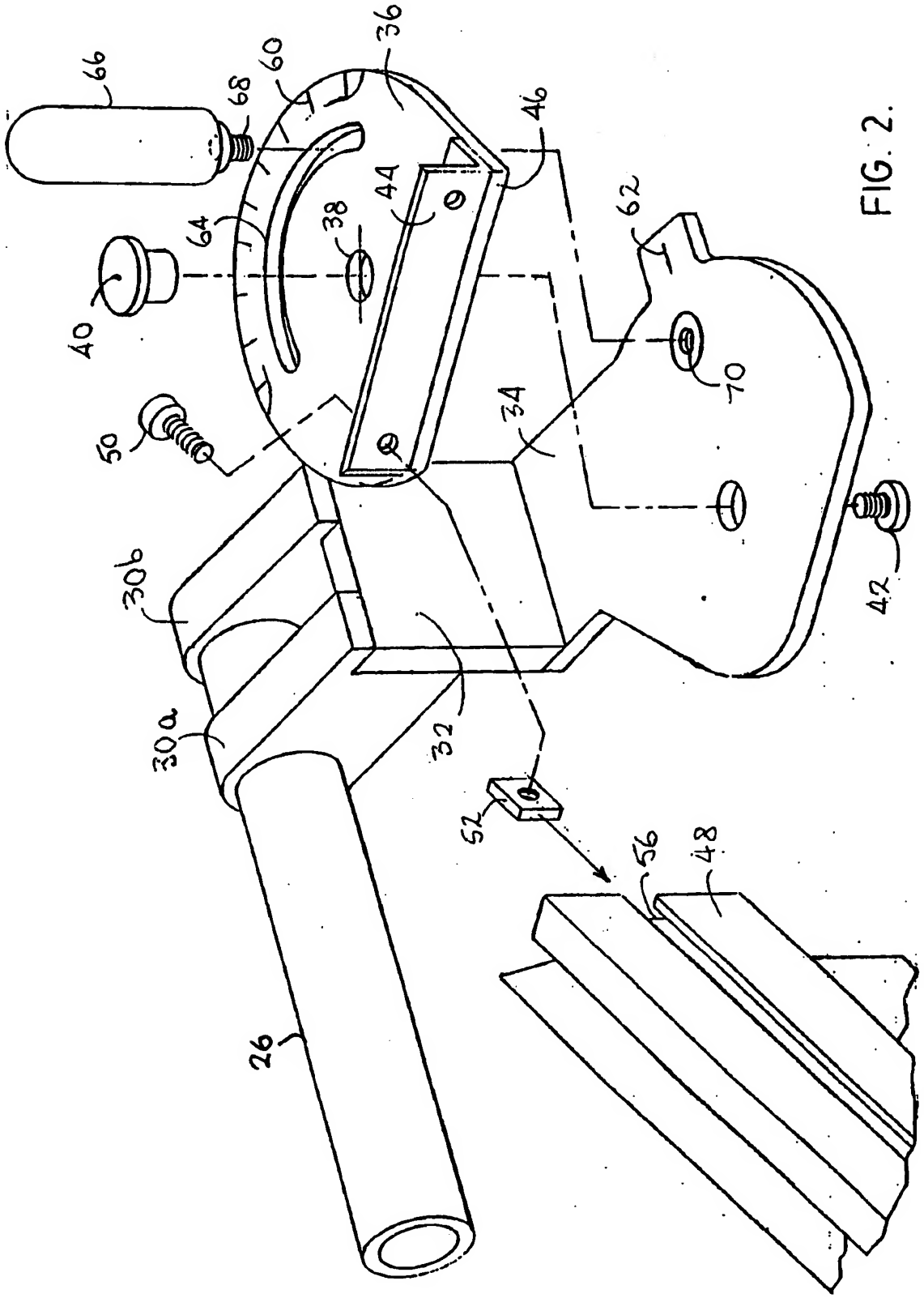
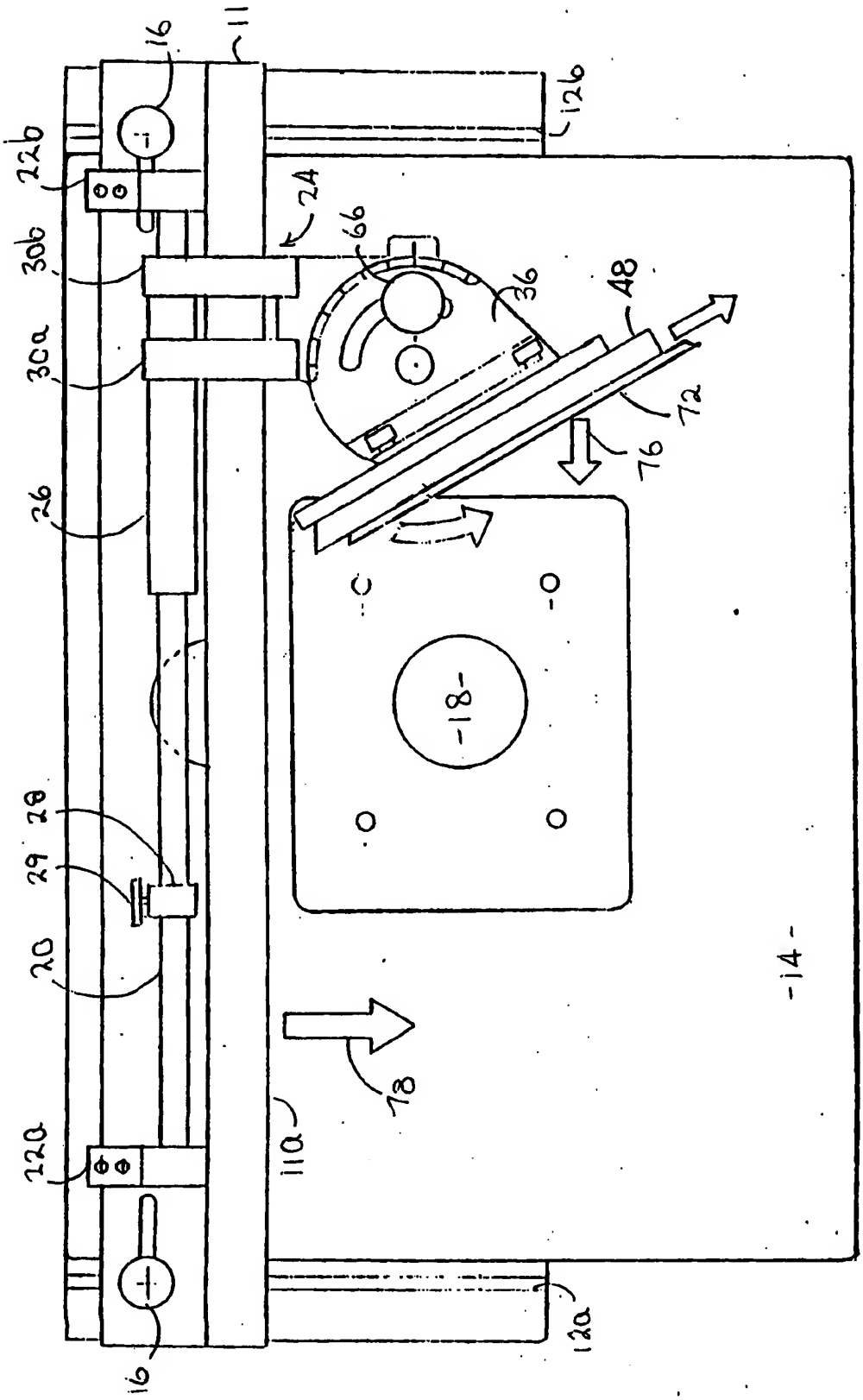


FIG. 2.


16
11
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22a
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16

FIG.3.

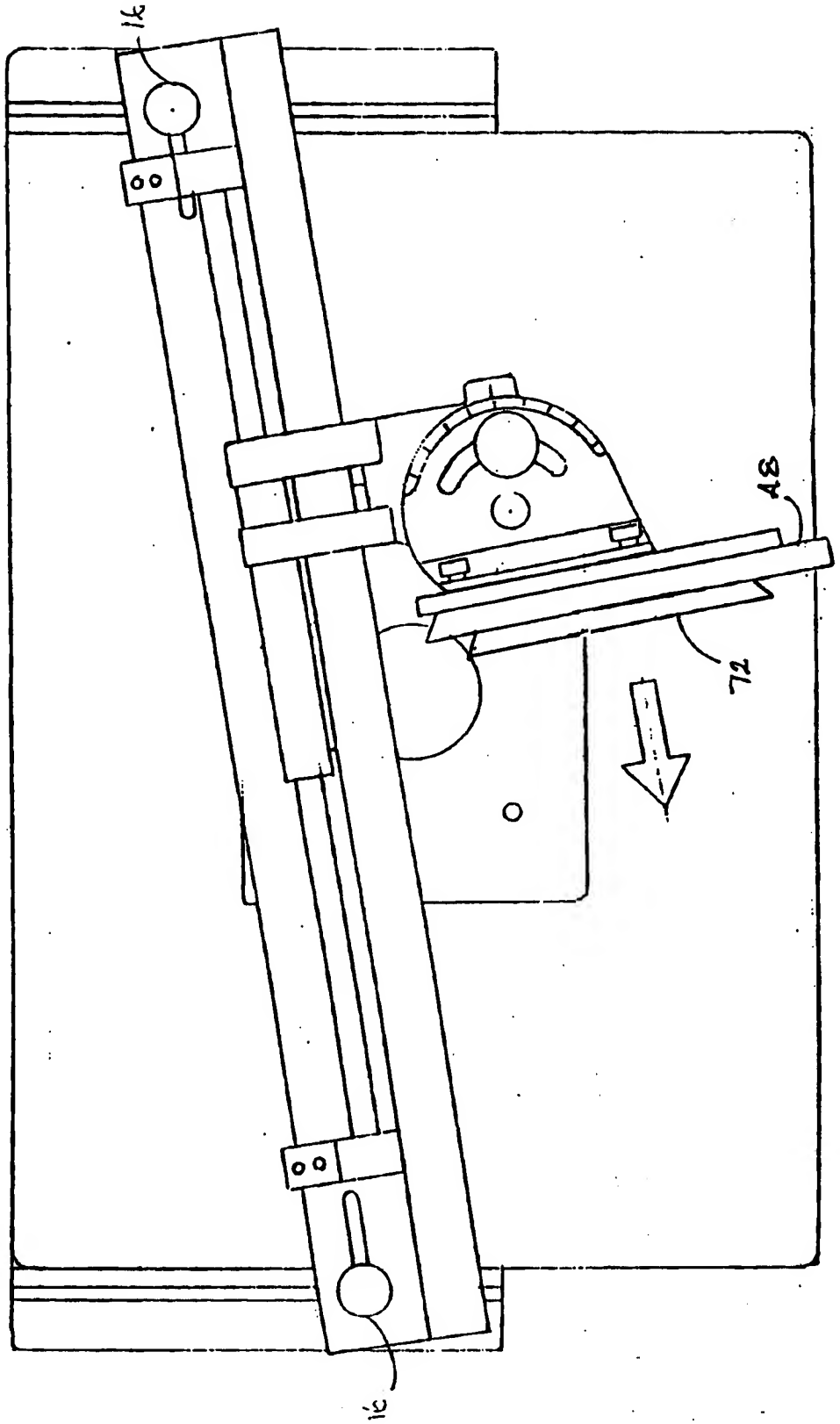

FIG. 4